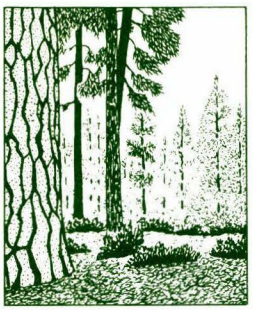
~~9931~~
~~F76Ed.~~

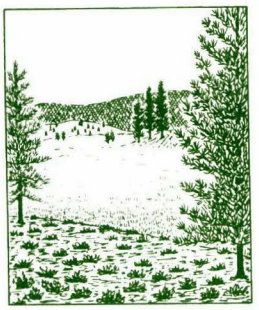
SD11
A5A31
94



FOREST RESEARCH NOTES

CALIFORNIA FOREST AND RANGE EXPERIMENT STATION
GEORGE M JEMISON, DIRECTOR

U.S. DEPARTMENT OF AGICULTURE – FOREST SERVICE



No. 94 March 16, 1955

DEVELOPMENT OF HIGH-RISK TREES IN PONDEROSA AND JEFFREY PINE STANDS FOLLOWING SANITATION-SALVAGE CUTTING

By Malcolm M. Furniss, Entomologist
and William E. Hallin, Forester

Sanitation-salvage cuttings, which remove the trees most susceptible to attack by bark beetles (high-risk trees), have been very effective in reducing losses caused by the beetles in ponderosa and Jeffrey pine stands. In studies on the Blacks Mountain Experimental Forest, Bongberg 1/ found that the cumulative reduction in insect-caused losses was more than 70 percent for a 10-year period following sanitation-salvage cutting. More recent data from the experimental forest indicate that losses are reduced for 15 or more years after the cutting.

Another question at least as important to the owner as the length of time that losses are reduced is how many new high-risk trees develop before the second cutting. The general situation in eastside pine is that the initial sanitation-salvage cuttings over a working circle or property are taking about 15 to 20 years. At the end of the first cutting cycle, when the second cutting begins, some other type of cutting, such as unit area control 2/ probably will be employed. However, the quantity of new high-risk trees that have developed must be taken into account by the manager in calculating what other timber he should harvest while holding to a fixed allowable cut.

1/ Bongberg, J. W. Results of 10 years of bark beetle control by logging high-risk trees, Blacks Mountain Experimental Forest, Lassen County, California. Forest Insect Laboratory, Berkeley, California (manuscript report). 18 pp. May 6, 1949.

2/ Hallin, W. E. Unit area control -- its development and application. Calif. Forest and Range Exp. Sta. Misc. Paper 16. 10 pp. October, 1954.

LIBRARY COPY
ROCKY MT. FOREST & RANGE
EXPERIMENT STATION

The California Forest and Range Experiment Station is maintained at Berkeley in cooperation with the University of California.

AGRICULTURE - BERKELEY

The number of high-risk trees that develop during the 15 or 20 years after the first sanitation-salvage cut was determined by a study made in 1954. Four compartments on the Blacks Mountain Experimental Forest, where sanitation-salvage cutting had been conducted, were the site for this study. Two of the compartments had been cut in 1937 and two in 1938, leaving only the low-risk trees. These trees were reclassified as to risk in 1954; consequently, the results show the development of high-risk trees for periods of 16 and 17 years after sanitation-salvage cutting.

In 1954 high-risk trees averaged 1,110 board feet, or one high-risk tree per acre (table 1); at the time of cutting, high-risk trees averaged 3,000 board feet, or 2.7 trees per acre. In 1954 high-risk trees made up 7.7 percent of the estimated stand volume. In contrast, at the time of cutting in 1937 and 1938 high-risk trees made up 17.2 percent of the virgin stand volume. The volume of high-risk trees present 16 and 17 years after cutting was only 37 percent as great as in the virgin stand before cutting.

We can conclude that in stands similar to those at Blacks Mountain about 1,100 board feet per acre of high-risk trees may be expected at the second cutting 15 to 20 years after a sanitation-salvage cutting. This still represents a considerable reduction in high-risk trees in comparison with uncut stands.

Table 1.--Volume and number of high-risk trees 1/ at the time of sanitation-salvage cutting and 16 and 17 years later

Compartment	Area	Original stand 2/ volume per acre	High-risk trees at the time of cutting: Volume per acre	High-risk trees at the time of cutting: Number per acre	High-risk trees 16 & 17 yrs. after cutting: Volume per acre	High-risk trees 16 & 17 yrs. after cutting: Number per acre
	acres	bd. ft.	bd. ft.		bd. ft.	
G 2-14	81.3	17,480	2,740	2.4	770	1.1
G 8-10	63.4	19,210	2,680	1.9	1,180	1.0
B 25-1	112.7	16,310	2,590	2.5	1,500	1.3
B 27-4	95.7	17,460	3,890	3.8	880	.6
All	353.1	17,460	3,000	2.7	1,110	1.0

1/ Risk 3 and 4 ponderosa and Jeffrey pine.

2/ Pine only.